

## ESTIMATED SOUND POWER LEVEL OF GAS TURBINE ENGINE NOISE

1. Engine power rating: \_\_\_\_\_ MW
2. Overall PWL of unquieted engine noise components from equations 2-4, 2-5, and 2-6 or table 2-5 of PPA manual:
  - a. Engine casing  $L_w = 120 + 5 \log(\text{rated MW}) =$  \_\_\_\_\_ dB re  $10^{-12}W$
  - b. Engine intake  $L_w = 127 + 15 \log(\text{rated MW}) =$  \_\_\_\_\_ dB re  $10^{-12}W$
  - c. Engine exhaust  $L_w = 133 + 10 \log(\text{rated MW}) =$  \_\_\_\_\_ dB re  $10^{-12}W$

Octave Frequency Band in Hz								
31	63	125	250	500	1000	2000	4000	8000

**Part A. Engine casing noise.**

3. Octave band adjustments for unquieted engine noise from table 2-6

10	7	5	4	4	4	4	4	4
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4. Octave band PWL of unquieted casing noise (Item 4 = Item 2a - Item 3, in bands)

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5. Noise reduction provided by engine casing enclosure, if applicable, from Table 2-7 or other data

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6. Octave band PWL of enclosed engine casing (Item 6 = Item 4 - Item 5)

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**Part B. Air inlet noise.**

7. Octave band adjustments for unquieted air inlet to engine, from table 2-6

19	18	17	17	14	8	3	3	6
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8. Octave band PWL of unquieted inlet (Item 8 = Item 2b - Item 7, in bands)

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9. Insertion loss of  $90^\circ$  square turn in inlet air path, if applicable, from table 3-9  
(Use adjusted values if turning vanes are present, para 3-4b)

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10. Insertion loss of inlet muffler, from manufacturer's data or estimated from tables 3-3 to 3-8

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11. Directivity effect of inlet stack in direction of interest, from table 2-8 (Observe correct signs)

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12. Total noise reduction of Items 9 through 11 in direction of interest (Observe correct signs)

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13. Effective PWL of quieted inlet noise radiated in direction of interest (Item 13 = Item 8 - Item 12)

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**Part C. Exhaust noise.**

14. Octave band adjustments for unquieted exhaust from engine, from table 2-6

12	8	6	6	7	9	11	15	21
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15. Octave band PWL of unquieted exhaust noise (Item 15 = Item 2c - Item 14, in bands)

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16. Insertion loss of  $90^\circ$  square turn in exhaust path, if applicable, from table 3-9 (Use adjusted values if turning vanes are present, para 3-4b)

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17. Insertion loss of exhaust muffler, from manufacturer's data or estimated from tables 3-3 to 3-8

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18. Directivity effect of exhaust stack in direction of interest, from table 2-8 (Observe correct signs)

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19. Total noise reduction of Items 16 through 18 in direction of interest (Observe correct signs)

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20. Effective PWL of quieted exhaust noise radiated in direction of interest (Item 20 = Item 15 - Item 19)

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